

IN THE CLAIMS:

All pending claims and their present status are produced below.

1. (Currently Amended) A computer-implemented method of image resampling~~an~~
~~image~~, comprising:

estimating input image statistics from input pixel values associated with an input

image to be resampled;

substituting the input image statistics for unknown output image statistics;

determining an optimum set of filter tap weights; and

calculating output pixel values to produce an output image.

2. (Currently Amended) The method of claim 1, wherein the input image statistics
comprise an auto-correlation matrix and a covariance vector.

3. (Original) The method of claim 2, wherein the step of estimating input image
statistics further comprises:

calculating second order moments for the auto-correlation matrix and the covariance

vector from pixel values in an input context; and

computing the auto-correlation matrix and the covariance vector using the second

order moments and a transpose operator.

4. (Original) The method of claim 2, wherein the step of determining an optimum set of
filter tap weights further comprises computing the product of the covariance vector and the
inverse of the auto-correlation matrix.

5. (Original) The method of claim 2, wherein the step of calculating output pixel values
further comprises computing the product of the set of filter tap weights and input pixel
values, for pixel values in the input context.

6. (Currently Amended) A computer-implemented method of image resampling an image, comprising:

estimating an auto-correlation matrix and a covariance vector from input pixel values

associated with an input image to be resampled,

the estimation comprising:

calculating second order moments for the auto-correlation matrix and the

covariance vector from pixel values in an input context; and

computing the auto-correlation matrix and the covariance vector using the

second order moments and a transpose operator;

substituting input image statistics for unknown output image statistics;

calculating an optimum set of filter tap weights as the product of the covariance

vector and the inverse of the auto-correlation matrix; and

calculating output pixel values to produce an output image as the product of the set of filter

tap weights and input pixel values for pixel values in the input context.

7-12. (Cancelled)

13. (Currently Amended) A computer program product for image resampling an image,
the computer program product comprising:

a computer-readable storage medium; and

computer program code, coded on the computer-readable storage medium,

comprising:

~~a software portion~~ an estimation module configured to estimate input image

statistics from input pixel values associated with an input image to be

resampled;

~~a software portion~~ a substitution module configured to substitute the input image statistics for unknown output image statistics;
~~a software portion~~ a filter weight calculation module configured to calculate an optimum set of filter tap weights;
and ~~a software portion~~ an output pixel calculation module configured to calculate output pixel values to produce an output image.

14. (Currently Amended) The computer program product of claim 13, wherein the input image statistics comprise an auto-correlation matrix and a covariance vector.

15. (Currently Amended) The computer program product of claim 14, wherein the ~~software portion~~ estimation module configured to estimate input image statistics is further configured to:

calculate second order moments for the auto-correlation matrix and the covariance vector from pixel values in an input context; and
calculate the auto-correlation matrix and the covariance vector using the second order moments and a transpose operator.

16. (Currently Amended) The computer program product of claim 14, wherein ~~software portion~~ the filter weight calculation module configured to calculate an optimum set of filter tap weights is further configured to calculate the product of the covariance vector and the inverse of the auto-correlation matrix.

17. (Currently Amended) The computer program product of claim 14, wherein the ~~software portion~~ output pixel calculation module configured to calculate output pixel values is further configured to calculate the product of the set of filter tap weights and input pixel values, for pixel values in the input context.

18. (Currently Amended) A computer program product for image resampling an image,
the computer program product comprising:

a computer-readable storage medium; and

computer program code, coded on the computer-readable storage medium, comprising:

~~a software portion~~ an estimation module configured to calculate an auto-correlation
matrix and a covariance vector using second order moments for the auto-
correlation matrix and the covariance vector from pixel values associated with
an input image to be resampled in an input context and a transpose operator;

~~a software portion~~ a substitution module configured to substitute the input image
statistics for unknown output image statistics;

~~a software portion~~ a filter weight calculation module configured to calculate an
optimum set of filter tap weights as the product of the covariance vector and
the inverse of the auto-correlation matrix;

and ~~a software portion~~ an output pixel calculation module configured to calculate
output pixel values to produce an output image as the product of the set of
filter tap weights and input pixel values for pixel values in the input context.

19. (Currently Amended) A system for image resampling an image, comprising:

a processor;

means for estimating input image statistics from input pixel values associated with an
input image to be resampled;

means for substituting the input image statistics for unknown output image statistics;

means for determining an optimum set of filter tap weights; and

means for calculating output pixel values to produce an output image.

20. (Currently Amended) The system of claim 19, wherein the input image statistics comprise an auto-correlation matrix and a covariance vector.
21. (Original) The system of claim 20, wherein the means for estimating input image statistics further comprises:
- means for calculating second order moments for the auto-correlation matrix and the covariance vector from pixel values in an input context; and
 - means for computing the auto-correlation matrix and the covariance vector using the second order moments and a transpose operator.
22. (Original) The system of claim 20, wherein the means for determining an optimum set of filter tap weights further comprises computing the product of the covariance vector and the inverse of the auto-correlation matrix.
23. (Original) The method of claim 20, wherein the means for calculating output pixel values further comprises computing the product of the set of filter tap weights and input pixel values, for pixel values in the input context.
24. (Currently Amended) A system for image resampling an image, comprising:
- a processor;
 - means for estimating an auto-correlation matrix and a covariance vector from input pixel values associated with an input image to be resampled, the estimation comprising:
 - means for calculating second order moments for the auto-correlation matrix and the covariance vector from pixel values in an input context; and
 - means for computing the auto-correlation matrix and the covariance vector using the second order moments and a transpose operator;

means for substituting input image statistics for unknown output image statistics;

means for calculating an optimum set of filter tap weights as the product of the

covariance vector and the inverse of the auto-correlation matrix; and

means for calculating output pixel values to produce an output image as the product

of the set of filter tap weights and input pixel values for pixel values in the

input context.

25. (New) The method of claim 3, wherein the input context comprises a rectangular window centered on each coordinate in the input image.

26. (New) The method of claim 6, wherein the input context comprises a rectangular window centered on each coordinate in the input image.

27. (New) The computer program product of claim 15, wherein the input context comprises a rectangular window centered on each coordinate in the input image.

28. (New) The computer program product of claim 18, wherein the input context comprises a rectangular window centered on each coordinate in the input image.